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| 09/977,399 | 10/16/2001 | Tatsuya Kawahara | 77661/57 | 3063 |

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| EXAMINER |
|---|
| HODGE, ROBERT W |

| ART UNIT | PAPER NUMBER |
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| 1745 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 04/09/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/977,399 | KAWAHARA ET AL. | |
| | Examiner | Art Unit | |
| | Robert Hodge | 1745 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *25 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *10,19,25,29,34 and 40-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,19,25,29,34 and 40-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments, see Remarks, filed 1/25/07, with respect to the objection and rejection of claim 34 under 35 U.S.C. 112, first paragraph have been fully considered and are persuasive. The objection and rejection of claim 34 under 35 U.S.C. 112, first paragraph has been withdrawn.

Applicant's arguments filed 1/25/07 have been fully considered but they are not persuasive. Applicants continue to argue that claim 25 is not indefinite and is clear as currently recited and that layers of different materials will not inherently have different characteristics from one another. For the later argument, the Examiner is not going to argue inherent properties of different materials, because applicants do not define in claim 25 any specific materials. So therefore due to the breadth of the claim, the Examiners statement still holds true, because every different material does in fact have different physical properties (emphasis added), this statement cannot be argued, this is a fact! The rest of applicants arguments have been addressed numerous times and the Examiner refers applicants to the Office action dated 9/26/06 where it is apparent that applicants don't feel the Examiner knows what applicants are claiming because of their arguments to the contrary of the Examiner's statements and grounds of rejection, thus the indefinite rejection. Therefore claim 25 is still indefinite and the rejection will be maintained.

With regards to claim 10, the Examiner is well versed in MPEP 2113. In fact Applicants have deliberately left out the first half of MPEP 2113, which states:

PRODUCT-BY-PROCESS CLAIMS ARE NOT LIMITED TO THE MANIPULATIONS OF THE RECITED STEPS, ONLY THE STRUCTURE IMPLIED BY THE STEPS

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.)"

Applicants state that the final product of Kato is not carbonized because it is solidified at a lower temperature than 2000°C. However as was pointed out in the grounds of rejection Kato clearly teaches that the "fibers can be carbonized", column 3, lines 46 and 47. Carbonizing is well known in the art to be performed at high temperatures, and

by said disclosure carbon will be in fact present in the final product due to carbonization regardless of what temperature it was actually carbonized.

With regards to claim 25 applicants state that claim 25 requires two layers both made of a mixture of carbon and synthetic resin. Nowhere in the claim is said requirement found and therefore the arguments are not persuasive for reasons already made of record.

With regards to claims 29 and 34, applicants have again added product-by-process limitations, which as already clarified above, do not read over the prior art rejection. Specifically with claim 29, the solvent will not be present in the final product because it is removed during the finishing process of the diffusion layer. Specifically with claim 34, it does not matter how the synthetic resin is integrated with the filaments or when in the process it is performed as long as it is structurally present in the final product.

Therefore in every instance clarified above since the final product has been found in the prior art it reads on the claims as so recited.

The rest of applicants' arguments are not persuasive for reasons already made of record.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

**The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants use the terms "adhesiveness" and "strength" to describe specific properties of the different layers of their "multi-layer structure". However no recitation is made to how the different layers are actually structurally different from one another by the use of said terms. If a multilayer structure is present with different types of materials it is inherent that the different layers are going to be different in strength and adhesiveness. Therefore any multilayered structure with different types of materials as the layers reads on the claims as so recited.

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 10, 25, 34, 40 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10261421 (U.S. Patent No. 6,127,059 is used as the English translation) hereinafter Kato.

Kato teaches a diffusion layer with at least a base layer (abstract lines 1-2) that has a water-repellent layer (abstract line 15, column 3, line 13 and column 4 line 15 et seq). Kato also teaches "a carbonized yarn of woven fabric [column 3, lines 39-42 and lines 46-47], and a carbonized binder impregnated into the yarn [column 4, lines 15 et seq]". It is inherent that a binder that is impregnated into a woven yarn would connect

the filaments of the yarn together. Kato further teaches a non-woven base layer (column 6, lines 51 and 66) with a synthetic resin binder impregnated into it (column 5, lines 50-52), it being pressed (column 5, line 9) and carbonized (column 3, lines 39-42 and lines 46-47). Kato also teaches a base layer having opposite surfaces (column 6, line 34 and claim 6), that the water-repellent layer is a solidified mixture of carbon and synthetic resin (column 4, lines 15-16 and claim 4), and that the water-repellent layer is multi layered (column 1, lines 15 et seq). It is inherent that multiple layers would have different adhesive properties especially if they are applied to the substrate under different conditions such as disclosed by Kato (column 1, lines 29-31 or column 6 lines 4-8). Kato further teaches the use of two kinds of binders (column 4, lines 50-56). The examiner notes that of the materials disclosed by Kato, the order of use determines which material will have a higher rigidness. The examiner notes that the use of the phraseology "higher rigidness" is relative to the materials at hand and can change with any reference. The examiner further notes that all of the materials listed in the Kato reference have some sort of adhesive properties. Kato also teaches solidifying the carbon and synthetic resin mixture (column 5, lines 9-10) and the presence of filaments (column 5, line 46). The examiner notes that claims 10, 25, 29, 34, 40 and 41 are admitted to be a product-by-process claims by the applicants. "Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps". See MPEP § 2113. Therefore because all of the final structure recited in claims 10, 25, 29, 34, 40 and 41 is present in the Kato reference, claims 10, 25, 29, 34, 40 and 41 are included in the above 102(b) rejection.

***Claim Rejections - 35 USC § 102/103 & 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 19 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S Patent No. 6,667,127 hereinafter referred to as Beattie.

Beattie teaches a diffusion layer with at least a base layer that is made from a non-woven carbon paper made from carbon fibers (column 6, lines 56-57), a synthetic carbonized resin binder that is non-uniformly impregnated therein (column 6, lines 63-67, column 8, lines 66-67, column 8, line 51 and column 9, line 31), that the layers on the base layer would be differing in the amount binder used (column 9, lines 56-64 and claim 33) and a rigid portion of the base layer would be present (column 9, lines 61-62 and column 11, line 13). In the alternative a person having ordinary skill in the art would recognize by the teachings of the Beattie reference that different portions of the diffusion layer would be more rigid than others because the Beattie reference teaches a non-uniform impregnation of the synthetic carbonized resin binder and certain portions would than be inherently more flexible than the more rigid portions.

Claim 29 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kato.

Kato teaches everything in the above 102 rejection. In the alternative a person having ordinary skill in the art would recognize that the Kato reference teaches two separate water-repellent layers which would inherently have different properties from each other see column 4, lines 15-56.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of U.S. Patent No. 5,346,785 hereinafter Akuto.

Kato teaches everything in the above 102 rejection.

Kato does not explicitly teach the material of the second water-repellent layer but does still teach a second water-repellent layer.

Akuto teaches a gas diffusion layer formed from cellulose (column 6, line 53 – column 7, line 10), which as applicants define in their specification is known for its water-repellent characteristics.

At the time of the invention it would have been obvious to a person having ordinary skill in the art to include the teaching of the Akuto reference in the Kato reference in order to provide a diffusion layer that uses a well known material for its water-repellent properties and is readily available for use in manufacturing.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato.

Kato discloses the claimed invention except for the ratio of PTFE to carbon in the different layers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the PTFE to carbon ratio of the different layers,

since it has been held that discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beattie.

Beattie discloses the claimed invention except for a binder in a spline pattern. It would have been obvious to one having ordinary skill in the art at the time the invention was made to change the shape of the binder of Beattie since it have been held that changing the shape of an object in the prior art involves only routine skill in the art. In re Dailey 149 USPQ 47, 50 (CCPA 1966). See also Glue Co. v. Upton 97 US 3, 24 (USSC 1878).

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RWH

JONATHAN CREPEAU
PRIMARY EXAMINER